This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (previously presented). A method of producing a transgenic avian, the method comprising:

microinjecting into a cell of an avian embryo a DNA molecule comprising a transgene containing a nucleotide sequence encoding a heterologous polypeptide;

introducing the microinjected avian embryo into an oviduct of a recipient hen, such that the recipient hen lays a shelled egg containing the microinjected avian embryo; and

incubating the shelled egg containing the microinjected avian embryo until the shelled egg hatches;

testing a hatched chick for the presence of the transgene; and

developing a chick that tests positive for the transgene to sexual maturity, thereby producing a transgenic avian containing the transgene.

2 (previously presented). The method of claim 1, wherein the avian embryo is a stage I embryo.

3 (previously presented). The method of claim 1, wherein the heterologous polypeptide is delivered to egg white of an avian egg produced by the transgenic avian.

4 (original). The method of claim 1, wherein the avian is a chicken.

5 (previously presented). The method of claim 1, wherein the nucleotide sequence encoding the heterologous polypeptide is operably linked to a transcriptional regulatory element that can direct gene expression in one or more cells of the transgenic avian.

6 (original). The method of claim 5, wherein the transcriptional regulatory element is a tissue specific promoter.

7 (previously presented). The method of claim 5, wherein the transcriptional regulatory element is a promoter region of an avian gene which encodes a protein selected from the group consisting of ovalbumin, lysozyme, ovomucoid, ovomucin, conalbumin and ovotransferrin.

8 (previously presented). The method of claim 1, wherein the DNA molecule is mixed with a nuclear localization signal (NLS) peptide prior to the microinjection.

9 (original). The method of claim 1, wherein the nucleotide sequence encoding a heterologous polypeptide is optimized for codon usage by an avian.

10 (original). The method of claim 1, wherein the transgene comprises an internal ribosome entry site (IRES).

11 (currently amended). The method of claim 10, wherein ~~the transgene comprises~~ at least two nucleotide sequences each encoding a heterologous polypeptide are introduced into the avian embryo.

12-13 (canceled)

14 (currently amended). The method of claim 11 ~~13~~, wherein the heterologous polypeptides comprise heavy and light chains of ~~multimeric protein is~~ an antibody.

15 (previously presented). The method of claim 1, wherein the DNA molecule is a bacterial artificial chromosome (BAC).

16 (canceled).

17 (previously presented). The method of claim 1, wherein the heterologous polypeptide-encoding sequence is operably linked to an IRES.

18 (previously presented). The method of claim 1, wherein the DNA molecule is not a eukaryotic viral vector.

19 (previously presented). The method of claim 1 further comprising isolating the heterologous peptide from the transgenic avian or an egg laid by the transgenic avian.

20 (previously presented). A method comprising:

microinjecting into a cell of an avian embryo a nucleic acid comprising a transgene containing a nucleotide sequence encoding a non-avian protein;

introducing the microinjected avian embryo into an oviduct of a recipient hen, such that the recipient hen lays a shelled egg containing the microinjected avian embryo;

incubating the shelled egg containing the microinjected avian embryo until the shelled egg hatches;

testing a hatched chick for the presence of the transgene; and

isolating the non-avian protein from an egg of a chick that tests positive for the transgene and is developed to sexual maturity.

21 (original). The method of claim 20, wherein the avian is a chicken.

22 (previously presented). The method of claim 20, wherein the nucleotide sequence encoding the non-avian protein is operably linked to a transcriptional regulatory element that can direct gene expression in one or more cells of the transgenic avian.

23 (previously presented). The method of claim 22, wherein the transcriptional regulatory element is a promoter region of an avian gene which encodes a protein selected from the group consisting of ovalbumin, lysozyme, ovomucoid, ovomucin, conalbumin and ovotransferrin.

24 (original). The method of claim 20, wherein the transgene comprises an internal ribosome entry site (IRES).

25 (currently amended). The method of claim 20, wherein ~~the transgene comprises~~ at least two nucleotide sequences each encoding a non-avian protein are introduced into the avian embryo.

26-27 (canceled).

28 (currently amended). The method of claim 25 ~~27~~, wherein the non-avian proteins comprise heavy and light chains of ~~multimeric protein is~~ an antibody.

29 (previously presented). The method of claim 20, wherein the nucleic acid is a bacterial artificial chromosome (BAC).

30 (canceled).

31 (previously presented) The method of Claim 20, wherein the avian embryo is a stage I embryo.

32-52 (canceled).

53 (previously presented). The method of claim 20 wherein the nucleic acid is DNA.

54 (previously presented). The method of claim 20 wherein the non-avian protein is selected from the group consisting of growth hormones, cytokines, structural proteins, enzymes, human growth hormone, interferon, lysozyme, β-casein, albumin, α-1 antitrypsin, antithrombin III, collagen, factors VIII, IX, X, fibrinogen, insulin, lactoferrin, protein C, erythropoietin (EPO), granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor (GM-CSF), tissue-type plasminogen activator (tPA), somatotropin, chymotrypsin, immunoglobulins, antibodies and immunotoxins.

55 (previously presented). A method comprising:

microinjecting into a cell of an avian embryo a nucleic acid comprising a transgene containing a nucleotide sequence encoding a pharmaceutical protein;

introducing the microinjected avian embryo into an oviduct of a recipient hen, such that the recipient hen lays a shelled egg containing the microinjected avian embryo;

incubating the shelled egg containing the microinjected avian embryo until the shelled egg hatches;

testing a hatched chick for the presence of the transgene; and

isolating the pharmaceutical protein from an egg of a chick that tests positive for the transgene developed to sexual maturity.

56 (previously presented). The method of claim 55, wherein the avian embryo is a stage I embryo.

57 (previously presented). The method of claim 55, wherein the pharmaceutical protein is delivered to egg white of an avian egg produced by the transgenic avian.

58 (previously presented). The method of claim 55, wherein the nucleotide sequence encoding the pharmaceutical protein is operably linked to a transcriptional regulatory element that can direct gene expression in one or more cells of the transgenic avian.

59 (previously presented). The method of claim 58, wherein the transcriptional regulatory element is a tissue specific promoter.

60 (previously presented). The method of claim 58, wherein the transcriptional regulatory element is a promoter region of an avian gene which encodes a protein selected from the group consisting of ovalbumin, lysozyme, ovomucoid, ovomucin, conalbumin and ovotransferrin.

61 (previously presented). The method of claim 55, wherein the nucleic acid is mixed with a nuclear localization signal (NLS) peptide prior to the microinjection.

62 (previously presented). The method of claim 55, wherein the nucleotide sequence encoding a pharmaceutical protein is optimized for codon usage by an avian.

63 (previously presented). The method of claim 55, wherein the transgene comprises an internal ribosome entry site (IRES).

64 (previously presented). The method of claim 20 wherein, the non-avian protein is selected from the group consisting of growth hormones, cytokines, structural proteins, enzymes, human growth hormone, interferon, lysozyme, β-casein, albumin, α-1 antitrypsin, antithrombin III, collagen, factors VIII, IX, X, fibrinogen, insulin, lactoferrin, protein C, erythropoietin (EPO), granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor (GM-CSF), tissue-type plasminogen activator (tPA), somatotropin, chymotrypsin, immunoglobulins, antibodies and immunotoxins.

65 (previously presented). A method comprising:

microinjecting into a cell of a chicken embryo a DNA molecule comprising a transgene containing a nucleotide sequence encoding a pharmaceutical protein;

introducing the microinjected avian embryo into an oviduct of a recipient hen, such that the recipient hen lays a shelled egg containing the microinjected avian embryo;

incubating the shelled egg containing the microinjected avian embryo until the shelled egg hatches;

testing a hatched chick for the presence of the transgene; and

isolating the pharmaceutical protein from an egg of a chick that tests positive for the transgene developed to sexual maturity.

66 (previously presented). The method of claim 65 wherein, the pharmaceutical protein is selected from the group consisting of growth hormones, cytokines, structural proteins, enzymes, human growth hormone, interferon, lysozyme, β-casein, albumin, α-1 antitrypsin, antithrombin III, collagen, factors VIII, IX, X, fibrinogen, insulin, lactoferrin, protein C, erythropoietin (EPO), granulocyte colony-stimulating factor (G-CSF), granulocyte macrophage colony-stimulating factor

(GM-CSF), tissue-type plasminogen activator (tPA), somatotropin, chymotrypsin, immunoglobulins, antibodies and immunotoxins.

67 (previously presented). The method of claim 65 wherein, the transgene comprises a promoter region of an avian gene which encodes a protein selected from the group consisting of ovalbumin, lysozyme, ovomucoid, ovomucin, conalbumin and ovotransferrin.

68 (previously presented). The method of claim 65 wherein, the avian embryo is a stage I embryo.